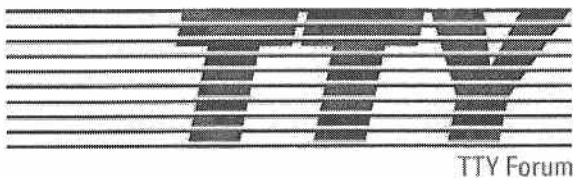# Exhibit O

TTY Forum

TTY FORUM - 17

Meeting Summary Report

March 14, 2001
ATIS Conference Center
Washington, DC

6. TTY Liaison Reports:

    • FCC
        Ed Hall noted that Elizabeth Lyle retired from the FCC, but that there were several other
        FCC Participants at the TTY Forum. Blaise Scinto, Deputy Chief of the Wireless Policy
        Division introduced the FCC contingent and noted that the new participants to the TTY
        Forum were not new to the issues being discussed today. She noted that the agency is in
        transition, but that the Commission is dedicated to addressing the issues of the TTY
        Forum.

        Blaise Scinto introduced Mindy Littell to discuss the FCC 4th R&O from December 14,
        2000 which set an implementation schedule for digital wireless systems to accept E-911
        calls from TTY devices. The deadline for implementation is June 30, 2002. She also
        noted that the 4th R&O established a quarterly reporting requirement for carriers. The
        first implementation status report is due April 15, 2001. Mindy Littell also noted that the
        commission allowed for the industry to report through the TTY Forum and noted that the
        FCC is thankful to the Forum for all of the work that they are doing to ensure that the
        industry is able to meet FCC deadlines.

        For a copy of the 4th R&O, please visit
        http://www.fcc.gov/Bureaus/Common_Carrier/Orders/2000/fcc00436.txt.

        Mindy Littell noted that CTIA requested clarification of the commission's statement with
        respect to enhanced protocols. Several entities filed in support of CTIA's request.

        Ed Hall thanked the FCC for their report.

    • CTIA
        No report was given.

    • PCIA
        Ed Hall noted that he was contacted by PCIA, they will no longer be participating in the
        TTY Forum. PCIA Liaison will therefore be removed from the agenda.

    • NAD
        No report was given.

    • TDI
        No report was given.

7. Review FCC Timeline
    Ed Hall introduced Contribution TTY17/01.03.14.06 which is a "cheat sheet" on the FCC
    implementation timeline and suggested report contents. He noted that the plan is to have a
    TTY Forum well in advance of the due date to give the TTY Forum Secretariat ample time to
    collect everyone's report and to have sufficient time for participants to review the Meeting

Nokia

Doug Neeley noted that Nokia engineers are also awaiting a final version of the standards.

Nokia is planning on TTY Compatibility in eight new phone programs with 10 to 18 different specific models having CDMA, TDMA, GSM and AMPS capability in various combinations.

Nokia mobile handset products are currently planning to support TTY/TDD Compatibility plus three-pin headset functions. Several models will use the bottom system connector to convert the Tx and Rx audio signals from XEAR and XMIC to a standard 3 conductor 2.5mm jack. Other projects have a built-in 2.5mm jack four-conductor on the handset that will eliminate the need for an external adapter. Nokia has formed a separate program team to implement the various interconnect cables according to TIA/EIA TSB-121.

Dick Brandt noted that the solution offered by Nokia might not be acceptable to all TTY users as the function key might complicate things too much. Ron Schultz, Ultratec noted that Nokia is treating the symptom as a temporary solution, but it's still a problem in that implementing the basic solution for HCO/VCO would still lead to voice degradation and certain people would still have problems.

Cheryl Gentry, Sprint PCS, noted that if the toggle is a user-friendly function she does not see an issue. But, she wanted to know if the voice degradation issue was a headset jack issue or whether it's because of the TTY. She asked if there is a way for the jack to recognize whether the plug-in is a TTY or a headset. Doug answered that right now, if you plug something into the headset jack, it says headset. Nokia's solution is to have an option to make it ALWAYS a TTY option if something is plugged into the headset jack.

Sean White, FCC Disability Rights Office, noted that the ADA Title 3 requires places of public accommodation and private entities to make accessibility and accommodation features. Section 255 requires telecommunications to make their services accessible to and usable by persons with disabilities. The FCC has left the market to decide which is the best solution. Sean White noted that the ADA and the Telecommunications Act have not provided specifics. He also noted that the Section 255 enforcement has been complaint driven.

In order to avoid complaints, some of the participants suggested surveying the consumers to ascertain whether the toggle function would be acceptable to them.

ACTION ITEM 2: Consumer groups will review the "user intervention" handset function and report back at the next TTY Forum on whether or not the function is considered a viable option.

In order to complete the action item, Dick Brandt, Gallaudet University, put together a statement regarding the toggle function for the use of TTY machines through the 2.5-mm jack. It reads:
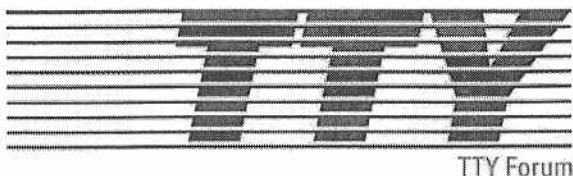
TTY17
March 14, 2001
Washington, DC
Meeting Roster

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Richard Brandt	Gallaudet University	908-310-7941		dbcon@att.net
Lorraine Buerger	AT&T Wireless	312-258-0062	312-441-2025	lori.buerger@attws.com
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Doug Neeley	Nokia	214-673-9284	972-894-5525	doug.neeley@nokia.com
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Scott Prather	AT&T Wireless	425-580-6220	425-702-3033	scott.prather@attws.com
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Pieter Seidel	Panasonic	770-338-6270	770-338-6210	pseidel@panasonicatlanta.com
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Bonnie Stafford	PCS One	717-721-7262	717-721-9777	bstafford@decommunications.com

Jerome Stanshine	FCC	202-418-2417	202-445-3220	jstanshi@fcc.gov
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Chuck Wood	US Cellular	773-399-7090	773-399-4984	cwood@uscellular.com

TTY Forum #17
Non-attending Participants
(These companies submitted Implementation Status Reports but did not attend TTY Forum #17)

Dobson Cellular
Southern LINC
VoiceStream Wireless
Washington RSA No. 8 Limited Partnership and Eastern Sub-RSA Limited Partnership

Exhibit P

TTY Forum

TTY FORUM - 18

Meeting Summary Report

June 12, 2001
ATIS Conference Center
Washington, DC

5. **Correspondence**
   - Judy Harkins, Gallaudet, introduced Contribution TTY18/01.06.12.07 and TTY18/01.06.12.13 which introduce the topic of testing against user requirements. She explained that Gallaudet University is currently set up to aid in testing.
   - Ed Hall, ATIS, introduced Contribution TTY18/01.06.12.08, which is an email from Krown TTY Manufacturers. The email explains that there is no difference between FastType and TurboCode.
   - Ed Hall, ATIS, introduced Contribution TTY18/01.06.12.12, which is an email from David Baquis of the Access Board. The email noted that V.18 does not include FastType or TurboCode because they are proprietary codes.

6. **TTY Liaison Reports: FCC; CTIA; NAD; TDI**
   - FCC: Mindy Littel introduced all FCC attendants and their titles and departments at the Commission. She thanked all entities that filed their reports last quarter and noted that the reports will continue to be required through the deadline of June 2002. She noted that the reports are helpful to the FCC for the purpose of knowing what is being done and what challenges lie ahead for the industry. Ed Hall thanked Mindy and asked if there was anything that could be done to make the reports more effective. Mindy noted that she thought that the reports were on target.
   - CTIA: no report
   - NAD: no report
   - TDI: Jim House noted that TDI is currently planning their conference and that the deadline for registration is next week.
   - ATIS: Ed Hall noted that ATIS is co-sponsoring with TIA the FCC Part 68, ACTA terminal certification program. He also noted that Beth Wilson from SHHH was both a member of the ACTA and a TTY participant. In addition, Ed noted that June 13-14 is the inaugural meeting of the AVSS/IVR Forum, which is a continuation of the AVSS forum held by Gallaudet University last year and will address the topic of making IVR Systems more acceptable to users with disabilities.

7. **Review TTY Forum #17 Agreements and Action Items**
   Ed Hall reviewed all agreements and action items from the TTY Forum #17. There were no comments submitted on those items.

8. **Industry Implementation Status Reports**
   Ed Hall noted that verbal reports could be made at this meeting, but should be followed by a written submission to the TTY Forum Secretariat by July 11, 2001. Megan Hayes, ATIS, noted that more information regarding status reports was available on the TTY Forum web site at http://www.atis.org/atis/tty/ttyforum.htm.

   LUCENT TECHNOLOGIES
   Jim Huntley and Steve Benno from Lucent Technologies introduced Contribution TTY18-01-06-12-05, which is an overview of Lucent's Implementation Status Report for the second quarter of 2001.

VOICESTREAM WIRELESS
Mark Cosgrove, VoiceStream Wireless, introduced Contributions TTY18-01-06-12-11, which is VoiceStream's Implementation Status Report for the second quarter of 2001.

CINGULAR WIRELESS
Sean Campbell, Cingular, noted that there has been a huge improvement in the communications between manufacturers and operators since the last TTY Forum. He further noted that the improved communication has put Cingular in a better position to meet the FCC deadlines.

However, Cingular still has some concerns on the availability of hardware and software both on the infrastructure and the handset sides. Mr. Campbell wanted to stress that the manufacturers and the operators need to continue to work together in order to be able to meet the FCC deadlines.

Mr. Campbell noted that TDMA centric testing of the no gain solution for the TDMA markets should commence shortly. They plan to have an implementation schedule developed in the third or fourth quarter of 2001. Cingular is ready to test GSM infrastructure in their markets. During the last GSM-NA conference in Calgary, there was an agreement on a final architecture solution to allow operators to choose which architecture best fits the operators' needs. At this time, the solution does not delay the roll out but allows for further interoperability and roaming for consumers. In addition, no pre-subscription is required. Cingular will begin work with the PSAPs as soon as the infrastructure testing is complete.

AT&T Wireless
Scott Prather, AWS, noted that the focus of their report is on test activities and mentioned that test documentation has been developed. Recently, they submitted a proposed preliminary field test plan to the GSM-NA for GSM handsets. A similar document exists for the TDMA handsets and they would like to make the document generally available to the forum as appropriate. The test plan is evolving as they continue with ongoing lab testing.

They are using modems supplied by Ultratec, the Intelimodem 2400, modified for use with a wireless device. That test bed is set up in their lab and they are using the Lober & Walsh set up. Their lab testing has been in a static environment. When they ran through the normal scenario of tests, evaluating both up-link and down-link on TDMA on a Panasonic and Nokia handset, they found character error rates which were consistently at 0%, with rare error rates seen at under .10%. There are some interactions with commonly used network functions that need to be addressed. For example, call waiting will interrupt the audio path briefly for the beep tone. If the caller hangs up to answer the call, 2-3 characters are lost during the interrupt and 3-5 characters are lost during the hanging up.

A typical character loss for a Short Message Service (SMS) message 70 characters long is a 7-10 TTY character loss. If the alert tone from the phone is brief, there will be a loss of 8-10 characters, but if the alert tone is longer, there will be more characters lost. If someone accidentally hits a key on the handset keypad, there will also be character loss. They were not able to do any inter-system handoff testing.

Usually, there is no character loss when the call is first set up, but occasionally, there is a one character loss or repetition. In the non-TTY mode, they found a considerable problem with a character error rate as high as 18%. Mr. Prather noted that there is quite a bit of impact on the lasting effects of echo characters depending on the quality of cable that connects the TTY to the handset. The quality of those cables needs to be addressed if there is to be reliable communication over TTY.

It was noted that this problem is not due to echo from the handset but is caused by intermediary cables that the consumer may use between the handset and the TY device. The users questioned how the consumer would make the selection of cable to ensure the least echo and the clearest message delivery. It was noted that this topic would be put aside to be further discussed during the technical activities portion of this meeting.

David Nelson, NAD, Norman Williams, Gallaudet, and Beth Wilson, SHHH, stated that they felt a sufficient solution to the loss of characters during a call waiting interrupt would be the ability to turn off the call waiting feature.

ERICSSON
Matt Kaltenbach presented Contribution TTY18/01.06.12.14, showing the status of testing and development at Ericsson. He noted that within handset development CDMA and TDMA work is now almost complete. Testing has begun on a number of products currently in development, and agreements are being reached on 711 and 911 PSAP testing. In testing that has already concluded, they have found that there are very low error rates for CDMA and that the Vocoder passes data bi-directionality. They found the GSM error rates below 1% under non-fading signal conditions, and that specific signal levels need further study.

On the network side, the latest ballot version of the CDMA standard is being used for testing in the transcoder solution. The test case executions will begin around the end of July and the software development tests should be completed by August 15th. The development schedule for TDMA is on track and ballots are being monitored to incorporate any changes of standards. With GSM they have moved to the circuit pooling solution to follow the industry consensus per 3GPP TS 23.226.

Sean Campbell, Cingular, thanked Ericsson for the level of detail in their report and invited other manufacturers to provide similar detail in their reports.

David Nelson, NAD, asked the FCC if the 311 non-emergency call center has to be accessible to TTY users, and Pam Gregory from the FCC noted that they haven't designated 311 nationwide to date and that her understanding is that the Commission is still considering it. Ms. Gregory also noted that the FCC needs to further investigate the requirements of the ADA before deciding on this issue. Toni Dunne, NENA, noted that there are areas of the nation that are implementing 311 for non-emergency calls and that in those areas, the same staff or level of training is found for 311 call takers as with the 911 call takers. David Nelson noted that the TTY Forum should keep in mind that 311 might become a future requirement for TTY accessibility.

Case 2:08-cv-00094-TSZ   Document 68-15   Filed 11/17/2008   Page 9 of 69

MOTOROLA

Paul Hall, Motorola, introduced all the Motorola representatives present. He then presented Contribution TTY18/01.06.12.17, which is a schedule of testing for CDMA, GSM, and TDMA. He noted that IDEN and CDMA are currently ready for First Office Application (FOA).

Norman Williams, Gallaudet, asked for the details on the user-test plan. Paul responded that the handset would be given to a test group of users to provide feedback of their experience. He noted that Motorola would be interested in having Gallaudet involved in the testing.

NEXTEL

Bob Montgomery, Nextel, noted that they, too, are on track for user and infrastructure testing.

NORTEL

Charles Spann, Nortel, reported that they will have product availability before the FCC deadline. They do see some challenges including handset availability because testing is revealing small problems with user interface. They are looking to handset manufacturers to get handsets for testing as soon as possible. Mr. Spann noted that one of the most pressing issues in testing is the lack of precise information from TTY manufacturers. This lack of information is making it difficult to determine whether unidentifiable problems in the carrier and handset testing are coming from the TTY machines or whether there is an issue that needs to be addressed on the part of the carrier or handset manufacturer.

9. Technical Activities

GTT Standardization:

Gunner Hellstrom, Ericsson, presented Contribution TTY18/01.06.12.09 regarding GTT Standardization.

A participant asked Mr. Hellstrom to define SIM-less phone, and he noted that SIM stands for Subscriber Identity Module and is a card that goes in a GSM phone to designate the user. A participant asked how a SIM-less phone could be used in an emergency. Chuck Wood, US Cellular, noted that only a 911 call could be made from a SIM-less phone. Mr. Wood then asked how CTM service would be accessed. Mr. Hellstrom responded that the phone would be able to access the CTM from the call set-up within the phone. Patrick Forster, FCC, asked if the phone would need to be set up or if the phone would automatically detect a TTY device. Mr. Hellstrom responded that there are several options at this point for how a phone would recognize TTY capabilities.

GSM Standards Update

Mark Cosgrove, VoiceStream, mentioned that a lot of the standards work for GSM has been distributed for approval as release 5 in the 3GPP. A lot of the work currently being done is on the architectural side. The changes have moved forward to the final GSM-NA approval at
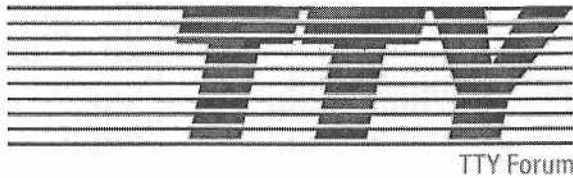
TTY18
June 12, 2001
Washington, DC
Meeting Roster

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Philip Boothby	Kyocera Wireless	303-247-2001	303-247-2151	philb@qcpi.com
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Susan Palmer	Cingular Wireless	202-419-3009	202-419-3047	susan.k.palmer@cingular.com
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Charles Spann	Nortel Networks	903-852-6798	903-852-3827	spann@nortelnetworks.com
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Beth Wilson	SHHH	301-657-2248	301-913-9413	bwilson@shhh.org
Chris Wojnar	TDI			cnwojnar@hotmail.com
Chuck Wood	US Cellular	773-399-7090	773-399-4984	cwood@uscellular.com
Watson Zan	Rogers Wireless	416-935-6031	416-935-7502	wzan@rci.rogers.com

The following companies submitted their TTY Implementation Status Reports for the second quarter of 2001 through the TTY Forum, but did not attend TTY Forum #18.

Bluegrass Cellular Inc.
Caprock Cellular Limited Partnership
Carolina West Wireless
Corr Wireless LLC
Dobson Cellular Systems
Farmers Cellular Telephone, Inc.
Great Lakes of Iowa inc.
Midwest Wireless Holdings L.L.C.
Pine Belt Cellular, In.c
PYXIS Communications
Qwest Wireless
RTSC Corporation, Inc.
Rural Cellular Corporation
Southern LINC
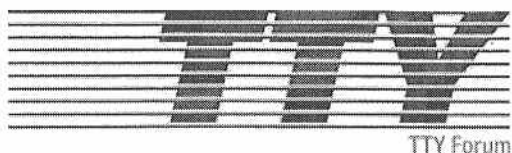TeleCorp Communications, Inc.
TMP Corporation
Tritel Communications, Inc.

Exhibit Q

TTY Forum

TTY FORUM - 19

Meeting Summary Report

September 26, 2001
ATIS Conference Center
Washington, DC

TTY/TDD Forum – 19

September 26, 2001
ATIS Conference Center
1200 G Street, NW, Suite 500
Washington, DC

Meeting Summary

1. Call to Order, Introductions and Attendance Roster

Ed Hall, ATIS, Chair, called the meeting to order at 9:03am. He stated that there are quite a few members attending this meeting via the Conference/virtual link. He asked Megan Hayes, TTY Forum Secretariat, to make a few comments on accessibility. She explained that having a Virtual Meeting in addition to the face-to-face meeting presented serious challenges to accessibility and outlined some suggestions for all participants to make the meeting as accessible as possible. All participants took the opportunity to introduce themselves.

2. Call for and Numbering of Contributions

Ed Hall introduced all contributions, and asked for any additional contributions. There were none. All contributions provided to the Secretariat electronically are available for download on the TTY Forum web site at http://www.atis.org/atis/tty/documents, or by sending a request to Megan Hayes (mhayes@atis.org). Contributions were submitted and numbered as follows:

Number	Title
TTY19/01.09.26.01	Agenda
TTY19/01.09.26.02	Roster
TTY19/01.09.26.03	TTY18 Meeting Summary
TTY19/01.09.26.04	TTY18 Agreements and Action Items
TTY19/01.09.26.05	TTSI Report to TTY Forum – 19
TTY19/01.09.26.06	Digit Wireless Presentation
TTY19/01.09.26.07	Sprint PCS Report
TTY19/01.09.26.08	Ericsson Report
TTY19/01.09.26.09	Appendix B – Recommended Text, Consumer Notification
TTY19/01.09.26.10	Agreements & Action Items
TTY19/01.09.26.11	TTY19 Meeting Summary
TTY19/01.09.26.12	

3. Review & Approve Agenda

The agenda was distributed and approved without modification.

4. TTY Forum #18 Summary

Ed Hall asked if there were any suggested modifications to the TTY Forum #18 Meeting Summary. There were none and the document was accepted as final.

5. Correspondence

There has been no correspondence received since the last meeting.

6. TTY Liaison Reports: FCC; CTIA; NAD; TDI

- FCC—Mindy Litell thanked all entities that filed reports last quarter. She noted that the reports are a valuable source of information for the Commission and expressed her appreciation for the Forum's effort in compiling these reports. She stated her hope that all necessary equipment is available so that carriers can meet the 12/31/01 deadline. She reminded the participants that reports will continue to be required each quarter and the FCC looks forward to hearing about any further issues and concerns.

- CTIA, NAD, and TDI had no reports at this time.

7. Review TTY Forum #18 Agreements and Action Items

Ed Hall reviewed all agreements and action items from the TTY Forum #18. There were no further comments submitted on these items at this point.

8. Industry implementation Status Reports

Ed Hall noted that there were 2 written reports submitted for this meeting, and after their presentations verbal reports would be accepted. He noted that the verbal reports should be followed by a written submission to the TTY Forum Secretariat by October 10, 2001, 5pm, Eastern Time. Reports should be emailed to Megan Hayes (mhayes@atis.org).
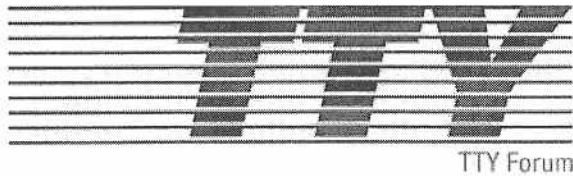
SPRINT PCS
Rachelle Redfairn and Scott Freiermuth introduced contribution TTY/01.09.26.07. They reported that Sprint PCS began testing in its internal lab, and that testing of vendors is to proceed over the next few months. They reported that they are having some difficulty with interoperability tests, and they have not isolated the problem at this time. They will be testing to determine problems, using the Gallaudet software. Andrea Williams, CTIA, asked where they were seeing these problems, in the handsets or in the network. Scott Freiermuth responded that they do not have the answer to that question at this time, but they will be isolating the elements in testing to trace the difficulty. Ed Hall mentioned that Sprint PCS has been very active with the TTY Technical Standards Incubator (TTSI), and will figure prominently in the TTSI report.

TTY Forum #19
Meeting Roster
September 26, 2001
Washington, DC

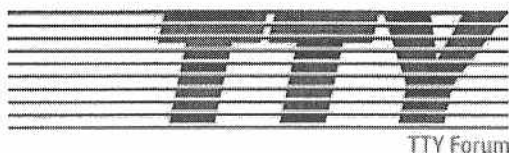| Name	Company	Telephone	Fax	Email
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Exhibit R

TTY Forum

TTY Forum – 20
Meeting Summary Report

December 11, 2001
ATIS Conference Center
Washington, DC

TTY/TDD Forum – 20

December 11, 2001
ATIS Conference Center
1200 G Street, NW, Suite 500
Washington, DC

TTY Forum

Meeting Summary

1. Call to Order, Introduction and Attendance Roster

Ed Hall, ATIS, Chair, called the meeting to order at 9:09 a.m. He thanked all the participants in attendance for their participation. All participants took the opportunity to introduce themselves.

2. Call for and Numbering of Contributions

Ed Hall introduced all contributions, and asked for any additional contributions.   All contributions provided to the Secretariat electronically are available for download on the TTY Forum web site at http://www.atis.org/atis/tty/ttydocs.htm, or by sending a request to Megan Hayes (mhayes@atis.org). Contributions were submitted and numbered as follows:

Number	Title
TTY20/01.12.11.01	Agenda
TTY20/01.12.11.02	Roster
TTY20/01.12.11.03	TTY19 Agreements and Action Items
TTY20/01.12.11.04	TTSI Report to TTY Forum – 20
TTY20/01.12.11.05	Appendix J
TTY20/01.12.11.06	FCC NPRM (November 14, 2001)
TTY20/01.12.11.07	TTY19 Meeting Summary
TTY20/01.12.11.08	Labeling and Marketing Plan
TTY20/01.12.11.09	Sony Ericsson Presentation
TTY20/01.12.11.10	Gallaudet Testing Results
TTY20/01.12.11.11	TTY Mode Switch User Questions Revised
TTY20/01.12.11.12	Roll Out Guidelines and Considerations
TTY20/01.12.11.13	TTY-20 Agreements & Action Items
TTY20/01.12.11.14	TTY-20 Meeting Summary

3. Review and Approve Agenda

The agenda was distributed and approved without modification.

4. TTY Forum #19 Summary

Ed Hall asked if there were any suggested modifications to the TTY Forum #19 Meeting Summary. There were none and the document was accepted as final.

5. **TTY Liaison Reports**

> 5a.   **FCC**—Mindy Litell thanked all entities for reports filed last quarter. She noted that the first deadline, December 31, 2001, is quickly approaching. She expressed her interest in hearing the company status reports given at this meeting, both to see progress and to judge if the second deadline, June 30, 2002, would be met.

> 5b.   **CTIA**—No report at this time.

> 5c.   **NAD and TDI**—Jim House, TDI, reported that he had worked with the TTY Working Group discussing labeling and marketing, and his contribution (TTY/2001/01.12.11.08) will be discussed during agenda item number ten "Terminal Product Labeling for TTY Accessible Devices."

6. **Review TTY Forum #19 Agreements and Action Items**

Ed Hall reviewed all agreements and action items from the TTY Forum #19. He detailed where these items would be reviewed in the agenda. There were no further comments submitted on these items at this point.

7. **Industry Implementation Status Reports**

Ed Hall noted that Sony Ericsson submitted a written report, and that verbal reports would be accepted from other participants. He noted that the verbal reports should be followed by a written submission to the TTY Forum Secretariat by January 9, 2002, 5 p.m. Eastern Time. Reports should be e-mailed to Megan Hayes (mhayes@atis.org) in final form Microsoft Word format.

Cingular
Ken Evans reported that Cingular has both TDMA and GSM technologies and uses three different vendors. He reported that progress with TDMA is proceeding with all three vendors and roll out should begin on schedule. He expressed concern with the status of GSM technology from Nortel, explaining that although Cingular had received the software solution from Nortel, there were bugs to be worked out and the software had yet to be tested and installed. He expressed his concern with the ability to meet the June 30, 2002 deadline for GSM in all markets due to the work still needed on the Nortel technology.

Ken Evans also mentioned that the company needs more information on the perceived need for the handsets for testing and retail. Several participants, including Susan Palmer, Cingular, noted the need for consumer input in the roll out process of these new TTY compatible devices. Ed Hall suggested adding discussions of roll out issue under agenda item #12, "New Business."

AT&T

Lori Buerger reported that the AT&T status is very similar to that of Cingular. She noted that their three vendors progress is similarly situated with regards to both TDMA and GSM, and that they are finding similar problems in the launching of the Nortel GSM technology. She noted that as this forum is meeting, she has another colleague involved in the Nortel testing. She noted that AT&T is comfortable with their ability to meet the deadline dates at this time. In regards to handsets, she informed the group that there is a Panasonic version of the TTY compatible phone currently available in stores. Pieter Seidel, Panasonic, noted that the available phone is a TDMA Tri-Band phone.

Sony/Ericsson

Matt Kaltenbach presented Contribution TTY20/01.12.11.09, which is Sony Ericsson's TTY Forum – 20 Report. In regards to network infrastructure status, he reported that the testing is complete on the TDMA network and General Availability (GA) was granted on December 5, 2001. He reported that the GSM network development was complete and testing and performance evaluation has begun. He reported Sony Ericsson's expectation that the first activation of this network will be during the first quarter of 2002. He reported that the CDMA network code is currently under development with testing slated for mid-December 2001.

In regards to handsets, Matt Kaltenbach reported that TDMA handsets have completed developmental testing and volume availability is expected March 31, 2002. GSM handsets have also completed developmental testing and volume availability is expected on February 20, 2002. He noted that CDMA handsets have encountered problems in the developmental test process and that the release plans for these handsets remain open, as solutions are sought for the problem.
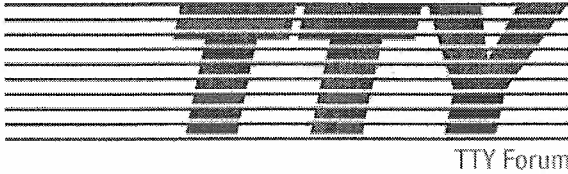
Matt Kaltenbach reported on the testing status of the devices and technology at Sony Ericsson, including testing occurring in the ATIS-sponsored incubator group, TTY Technical Standards Implementation (TTSI). A participant noted some concern over the 3% error rate displayed in the testing report. Mr. Kaltenbach explained that this 3% error rate occurred randomly as a result of a "hiccup" in the network. Peiter Seidel noted that error rates in voice quality often need to be averaged due to these random events, it is not an event that occurs only in TTY compatible technology. David Nelson, NAD, noted his concern that a crowded network could compound this kind of error and affect the quality of the call. Mr. Kaltenbach responded that the call completed error rate on a crowded network would be no different from an error rate seen on a normal day. Andrea Williams, CTIA, noted that the ability to complete a call was directly related to the amount of spectrum available in any given area. Mr. Seidel noted that with TDMA there are two places that a call can be affected by heavy network traffic: in call completion and during hand-off. He noted that if the network capacity is full, the call might be lost during hand-off, however, this is a problem that occurs in all calls, and is not a TTY specific issue. Beth Wilson asked about TTY_SILENCE, and Mr. Kaltenbach replied that they are still looking at why it occurs and the best way for it to be resolved within the industry.

Ms. Wilson referred to the diagram in the Sony Ericsson report, which showed an extra attachment device being used to enable TTY compatibility with a handset. Mr. Kaltenbach replied that this would be a temporary solution with the eventual goal being the integration of the TTY device in the handset. Peter Lee, Ameriphone, explained that new models are currently in

TTY – 20
Meeting Roster
December 11, 2001
Washington, DC

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Exhibit S

TTY Forum

TTY Forum – 21
Meeting Summary Report

March 5, 2002
ATIS Conference Center
Washington, DC

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5. **TTY Correspondence and Liaison Reports:** *FCC; CTIA; NAD; TDI; NENA; ATIS*

   a. **FCC** – Mindy Littel, FCC, introduced all FCC representatives to the Forum. She noted that the Commission is interested in hearing of the progress that has been made since the last Forum meeting. She also noted that the FCC is hopeful that the June 30, 2002 deadline is still feasible despite the problems found during testing and reported to the FCC by the TTY Technical Standards Implementation (TTSI) Incubator. She explained that the Wireless Policy Bureau and the Disability Rights Office would be meeting with ATIS and TTSI next week to discuss Contribution TTY21-02-03-05-07, the letter from TTSI to the FCC regarding the PSAP problem. Mr. Hall asked that all questions regarding this letter be held until Agenda Item 8c.

   b. **CTIA** – No Comments.

   c. **NAD** – No Comments

   d. **TDI** – Jim House noted that TDI has published their 2002 Blue Book and noted that if anyone was interested in obtaining a copy, they should contact him (jimhouse@tdi-online.org).

   e. **NENA** – Toni Dunne, NENA, noted that she has been updating NENA on the progress of TTY testing and that NENA is aware of the problem that was uncovered during testing. She noted that the Public Service Answering Points (PSAPs) have been removed from the loop until TTSI could test with the PSAP manufacturers, but that not all PSAP manufacturers have been participating in TTSI testing. She explained that NENA has been working to notify all manufacturers of the problem and to ask them to work with ATIS to ensure that all manufacturers' equipment is being tested.

   f. **ATIS** – Ed Hall introduced Contribution TTY21-02-03-05-07, a letter from ATIS (on behalf of the TTSI Incubator) to the FCC. The letter was written to notify the FCC of problems discovered while testing with PSAPs. He noted that ATIS would not be contacting the National Association of Regulatory Utility Commissioners (NARUC) as stated in the letter because of advice from NENA. Mr. Hall explained that ATIS and the TTSI would be meeting with the FCC to further discuss this letter on March 12, 2002, and that the Forum would be discussing it during Agenda Topic 8c.

6. **Review TTY Forum #20 Agreements and Action Items**
   Ed Hall reviewed Contribution TTY21-02-03-05-04, the Agreements and Action Items from TTY20. He detailed where these items would be reviewed in the agenda. There were no further comments submitted on these items at this point.

7. **Industry Implementation Status Reports**
   This agenda item was moved to follow the TTSI Technical Report.

Ericsson

Amy Johnson, Ericsson, presented Contribution TTY21-02-03-05-08, Ericsson's network infrastructure status report. She noted that the software for TDMA was initially released on December 5, 2001 and has had several new releases since that time. For GSM, the TTY solution had its FOA in December 2001 and January 2002. Rollouts will begin in March 2002. The CDMA software code development is complete as well as lab and integration testing. The software was available for carrier testing on February 8, 2002.

Sony Ericsson

Matt Kaltenbach presented Contribution TTY21-02-03-05-XX, Sony Ericsson's status report. He noted that development was complete for TDMA. Regression testing of HCO/VCO is scheduled for TTSI test event #4. Final handset user interface testing is also underway.

GSM handsets are in the final stages of development and testing. Carrier test units are available at the Special Needs Center. HCO/VCO regression testing is scheduled for March 2002. Product availability is expected by April 2002.

CDMA handsets have encountered performance issues during testing. Network testing revealed that the TTY standard is susceptible to echo. The phone is expected to be available by April 2002.

Sony Ericsson is undergoing drive testing with good results and they are in the final phases of product release. Mr. Kaltenbach noted that all products are scheduled to be available to customers prior to June 30, 2002.

Cingular

Ken Evans, Cingular, noted that the TTSI work has made implementation into the network much easier. He reported that on TDMA, Ericsson software was generally available on December 1, 2001 and that they are installing patches that they are hopeful will aid in the PSAP issue. He noted that they will probably turn on Ericsson TDMA switches in April.

Mr. Evans reported that GSM interoperability testing in Pleasanton, CA resulted in positive results. He explained that the Nortel switches will not be able to be turned on until May 7, 2002. He is concerned that the lateness of software availability may jeopardize the deadline.
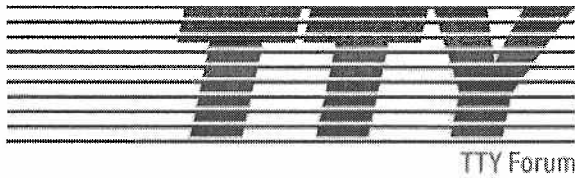
Mr. Evans reported that 60% of the Cingular network is currently operational and that by the end of April, the percentage is expected to be closer to 95%. They are hopeful that with the addition of Nortel switches in May, they will be 100% operational by the end of May.

Cingular has participated in interoperability testing with TTSI for all three of their air interfaces. Mr. Evans reported that mobile-to-mobile and mobile-to-landline testing has shown that they have a viable TTY solution. Once the PSAP issue has been resolved, they expect to be in full compliance. Cingular hopes that if the PSAP issue has not been resolved by the deadline, they will be able to deploy digital technologies to deaf users by the deadline.

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Meeting Roster
March 5, 2002
Washington, DC

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Exhibit T

TTY Forum

TTY Forum – 22
Meeting Summary Report

June 4, 2002
ATIS Conference Center
Washington, DC

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receiving necessary information. Mr. Nelson stressed the importance of having a trained sales force and the need for TTY customer service numbers to be widely available and publicized. Mr. Coston echoed these statements, noting the importance of consumer education and awareness.

CTIA (Cellular Telecommunications and Internet Association)

Andrea Williams asked about the current status of the concerns brought to the FCC regarding Public Service Answering Points (PSAPs) (Note: This is regarding a letter sent from the TTY Technical Standards Implementation Incubator (TTSI) to the FCC in February 2002). Mr. Coston asked if the FCC would take the time to address this during their liaison report. Jim Schlichting responded that he would address this question.

FCC (Federal Communications Commission)

Mindy Littell introduced the FCC participants in attendance today, and expressed her interest in hearing the upcoming industry status reports. She noted that roughly 30 companies have filed requests for a waiver of the June 30, 2002, date, and she explained that these requests are predominately for limited waivers of three to six months in a specific location. In some cases she noted that the waiver is being requested by small TDMA carriers looking to switch to a new air interface in light of larger carriers switch to GSM.

Jim Schlichting, FCC, noted the importance of the June 30, 2002 deadline, and reported that the FCC has received a mostly positive response from the industry meeting this deadline. He reported to the TTY Forum that the FCC had been approached regarding the high error rates resulting from tests involving PSAPs, he noted that it was suggested that the FCC issue a public notice regarding this matter. Mr. Schichting explained that the FCC is considering this matter and no final decision has been made regarding any action, but that some form of public notice or consumer notice would most likely be appropriate. He noted that, ideally, any bulletin from the FCC would be issued before July 1, 2002. Mr. Schlichting explained that, for the long term, this problem should be addressed and not allowed to progress any longer then necessary. The FCC is working with this Forum and the industry to alleviate the problem. He expressed his appreciation to the TTY Forum and the TTSI for all of their efforts toward the resolution of this issue.

Ms. Williams asked if coordination efforts had begun regarding the dissemination of information to consumers regarding TTY accessibility. Mr. Schlichting noted that work had begun on a public bulletin.

Mr. Nelson expressed his concerns about the ability for consumers to assess the situation within the PSAPs. Mr. Schlichting agreed with this concern and noted the importance of this issue. He informed the Forum that the FCC had no jurisdictional authority over PSAPs, and they can only approach the issue via consumer information and education. Through these methods, he said, the awareness level would be raised at the PSAPs. He stressed the importance of having public safety representatives aware of the problems, and gaining their assistance to correct the problem. Judy Harkins, Gallaudet University, noted the difficulty of advocacy of this issue on the local level, and suggested that

perhaps the FCC could query the Department of Justice on this matter, as they have jurisdiction over PSAPs.

Mr. Schlichting noted that updated testing information would be important to the FCC, and the FCC would consider any updates from the TTY Forum or the TTSI for inclusion in any future public notice. Several participants noted the importance of balancing the flow of immediate, less detailed, information, and the long-term dissemination of detailed information. Mr. Nelson commented that many in the deaf and hard-of-hearing community check their association web sites, rather then sites like the FCC, when searching for information. It was noted that it would be important for the industry to send the same information to consumers, and it was recommended that web site links to the FCC web page be widely used to disseminate information. Cary Barbin, Gallaudet University, suggested that the FCC take the individual language use abilities of deaf consumers while drafting any bulletin targeted to the deaf community.

6. Review TTY Forum #21 Agreements and Action Items

Mr. Coston reviewed all agreements and action items from the TTY Forum #21. He detailed where these items would be reviewed in the agenda. Megan Hayes, ATIS, reported that a press release had been distributed regarding the use of the TTY symbol on the packaging of TTY compatible equipment. There were no further comments submitted on these items at this point.

7. Technical Activities

7a.   Review of draft contribution to TR30.1

Dick Brandt, Gallaudet University, presented Contribution TTY22/02.06.04.06, a draft contribution to TIA's TR30.1 regarding problems discovered in ITU-T Recommendation V.18, which were also included in ANSI TIA/EIA-825. The document defines a problem caused in interworking between these implementations and existing TTYs over digital wireless connections. The contribution proposes a change to the text to the ITU-T, and opening a project to remove the corresponding text from ANSI TIA/EIS-825. Some suggestions were made to strengthen the statements in the recommended text, and Mr. Brandt indicated he would make the appropriate changes before presenting the contribution to TR30.1.

Action Item: Dick Brandt will edit Contribution TTY22/02.06.04.06 and send it to Megan Hayes for contribution to TR30.1

Agreement Reached: Contribution TTY22/02.06.04.06 will be sent, as edited by Dick Brandt, to TR30.1.

7b.   TTSI Report

Jim Turner, ATIS, presented Contribution TTY22/02.06.04.05, the TTSI report to TTY Forum #22. He noted that the TTSI has been a precedent-setting collaboration of industry players gathering to solve a specific issue. His report addressed several areas of testing in TTSI, some issues are still in progress and some issues have been closed.

Mr. Lucas also noted that this would be his last time attending the TTY Forum, as he would be retiring on June 28, 2002. He expressed his pleasure at participating in the TTY Forum, and he noted that it was an outstanding example of the industry working together. The participants in the TTY Forum gave Mr. Lucas a warm round of applause.

Sony Ericsson
Matt Kaltenbach reported that Sony Ericsson has handsets available for three air interfaces. TDMA handsets will be released prior to June 30, 2002, and GSM handsets are currently available through the Sony Ericsson Special Needs Center. Extensive conformance testing had occurred with the CDMA handsets, and the issues have been communicated to Qualcomm for patch code evaluation and parameterization.

Nokia
Chris Wallace reported that Nokia has produced handsets for TDMA, CDMA, GSM and multi-mode phones, and although there have been some issues with the S10 model, Nokia is committed to the completion date sighted by the carriers.

9. Consensus Statement for the FCC

The participants of the TTY Forum discussed the reasons for creating this document, and the best way of producing it. It was agreed that a consensus statement to the FCC would be important to demonstrate all that the TTY Forum had accomplished. It was determined that the Secretariat would draft the document based on some main points supplied by the Forum, and the document would then be reviewed by the forum via e-mail prior to being sent to the FCC.

S. Coston explained to the Forum that based upon the recent status reports given the Wireless Industry considers the Development Phase of TTY Compatibility to be Closed. Products are now in the Production Phase of the Plan and are moving into early launches through efforts of both the Wireless Manufacturers and Carriers. Released products for the Production Phase will progress through its cycle encompassing stronger field use by consumers, evaluation and feedback mechanisms channeled through Customer Service Departments that ultimately influence future designs of products. Effective support and handling of these feed-back mechanisms while in the Production Phase are typically referred to as Maintenance updates. It was agreed by all Wireless Industry that Digital Wireless TTY Compatibility has now moved into a Production Release and Maintenance Phase for all future changes.

Agreement Reached: The TTY Forum will send a consensus statement to the FCC that reflects the readiness of the industry for TTY deployment over the digital wireless network by the June 30, 2002 deadline.

Action Item: The Secretariat will draft a consensus statement for the FCC and distribute it to the members of the TTY Forum by June 18, 2002 for their consideration. The participants will submit their comments by June 25, 2002, and the Secretariat will forward the final document to the FCC.

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Meeting Roster
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